

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 70-734/85-09

Docket No. 70-734

License No. SNM-696

Licensee: GA Technologies, Inc.
P. O. Box 85608
San Diego, California 92138

Facility Name: Torrey Pines Mesa and Sorrento Valley Sites

Inspection at: San Diego, California

Inspection conducted: June 10-14, 1985

Inspectors: B. L. Brock 7/2/85
B. L. Brock, Fuel Facilities Inspector Date Signed

P. R. Zurakowski 7/2/85
P. R. Zurakowski, Radiation Specialist Date Signed

Approved By: R. D. Thomas 7/2/85
R. D. Thomas, Chief Date Signed
Nuclear Materials Safety Section

Summary:

Inspection on June 10-14, 1985 (Report No. 70-734/85-09)

Areas Inspected: A routine unannounced safety inspection was conducted of management organization and controls; operator training and retraining; criticality safety; operations review; radiation protection; transportation of radioactive materials; radioactive waste management/10 CFR Part 61; and emergency preparedness.

The inspection involved a total of 64 hours onsite by two regionally based inspectors.

Results: One violation was identified in one area (Section 7.B., failure to provide a quality control program for waste classification). No violations were identified in the remaining seven areas.

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DETAILS

1. Persons Contacted

*T. R. Colandrea, Director, Quality Assurance and Compliance
*F. O. Bold, Manager, Compliance Control Department
*K. C. Duffy, Manager, Nuclear Materials Management
*R. C. Noren, Director, Fuel Operations Division
*R. J. Nirschl, Manager, Nuclear Safety
R. L. McDermott, Supervisor, Nuclear Material Processing Center
*R. K. Krueger, Supervisor, Triga Fuel Productions
*L. R. Quintana, Supervisor, Health Physics
D. W. Hill, Senior Scientist
*R. P. Vanek, Manager, Fuel Fabrication Department
R. J. Cockle, Health Physics Technician
J. Keith, Health Physics Technician
*J. J. Hatch, Quality Engineer
E. Quimby, Manager, Security
S. W. Aiken, Manager, Security Systems and Material Control
J. M. Brock, Supervisor Emergency Services
D. M. Woodhouse, Shift Supervisor
E. O. Winkler, Staff Engineer
H. O. Johnson, Supervisor, Hot Cells
C. Nelson, Shift Supervisor
E. L. Spencer, Environmental Technician
S. Parron, Nuclear Instrument Calibration Technician
U. Overton, Senior Nuclear Waste Processor
B. Evens, Nuclear Materials Coordinator
T. Kiem, Nuclear Materials Coordinator
J. Narraez, Vault Supervisor

*Denotes those attending the exit interview.

2. Management Organization and Control

License Condition 9 of SNM-696 incorporates the statements, representations and conditions specified in Part II - License Specifications as part of the license.

A. Organization Structure

Section 3.1 of Part II - License Specifications permits the licensee to change organizational responsibilities, reporting locations and names, providing such changes do not adversely affect the implementation of license conditions and are reported to the NRC within sixty days after the change.

The Segment 10 fuel production has been completed. Some staffing changes and responsibility reassignments have occurred. Other changes planned to keep the radiological and environmental surveillance effort consistent with the status of the plant have been submitted to the Nuclear Materials Safety and Safeguards Office of the NRC for their review and approval. A portion of the licensee's request was approved separately to facilitate

modification to the licensee's Criticality Warning Alarm System (CWAS) (See Section 4B.(2)).

B. Procedure Controls

Section 3.7.2 of Part II - License Specifications requires procedures for all activities in which materials subject to this license are physically handled, stored, and chemically or physically changed.

The licensee was following the requirements of the May 30, 1985, license amendment as he modified the CWAS. Current activities involve preparing the wiring for the CWAS realignment to minimize the outage when the new circuitry is connected. The Health Physics Supervisor is monitoring the licensee's adherence to the CWAS modification procedure.

C. Internal Review and Audit

Section 3.6 of Part II - License Specifications requires that health physics inspections be conducted quarterly and nuclear safety inspections (see Section 4.B(1)) be conducted at least annually for all areas possessing SNM and at least quarterly for areas possessing more than 500 grams of SNM.

The licensee's completion of the Segment 10 fuel fabrication has resulted in reduced activities. The licensee continues however to conduct internal audits at required frequencies (quarterly) pending NRC approval for reduced frequencies. As required by the license specifications, the findings of the internal audits are appropriately documented, distributed, tracked and followed up to assure that the corrective action taken was effective.

No violations were identified.

3. Training and Retraining

Section 3.2.2.1 of Part II of the License Specification states that onsite radiological safety training will be conducted. During this inspection, monthly health physics reports for the second quarter were reviewed for training conducted during this period. In addition, the inspectors received site specific training in radiological safety, criticality safety and security in order to qualify for "unescorted access" identification badges. Upon passing the examination at the conclusion of the training the inspectors were informed that the "unescorted access" badges were being prepared and would be available for their use during the next inspection.

Starting July 9, 1985, the licensee is planning to give their annual sixteen hour retraining course in radiological and criticality safety.

During the second quarter of 1985, one sixteen hour and two four and one half hour training courses were conducted. All trainees successfully passed the written examination at the conclusion of the training. A

review of the material given, training aids utilized, and examination questions used indicated that the training was appropriate and completed as required.

No violations were identified.

4. Criticality Safety

Section 3.2.2.2 of the license application requires assurance of nuclear criticality safety through review of proposed SNM activities and review of proposed changes in processing equipment and procedures. It also requires frequent inspection and monitoring to assure adequate nuclear safety control. Independent verification of all determinations of criticality limits are also required.

A. Nuclear Criticality Safety Analysis

- (1) The installation of a low level radioactive liquid waste treatment system in Building 25 is nearing completion. A second unit of similar design is planned for installation in the mop water storage and sampling area in the high bay of the Sorrento Valley A (SV-A) Building. The latter system is being delayed until the system in Building 25 has performed satisfactorily.
- (2) The licensee continues to perform bimonthly audits although only quarterly audits are required by the license (SNM-696). The licensee's Nuclear Safety Engineer continues to include the Staff Engineer from the Nuclear Analysis Group on the nuclear safety audits team. The Staff Engineer is a specialist in neutronics.

B. Criticality Calibrations and Monitoring System

- (1) The CWAS modifications to coincidence circuitry are based on calculations made by the Staff Engineer from the Nuclear Analysis Group mentioned above. The modified system will be conservative relative to regulatory requirements (i.e., detector spacings will be significantly closer than necessary to meet the alarm conditions required in 10 CFR 70.24(a)).
- (2) The supervisor of health physics is closely monitoring the licensee's adherence to a procedure prepared to assure compliance with the new amendment to License SNM-696. The new amendment adds License Condition 26, which requires administrative control to preclude movement of special nuclear material (SNM) when the CWAS is down for modification. The planned approach is that the CWAS will be kept operating while most of the circuit modifications are being done. When the circuitry is ready, the CWAS will be shut down for a short period while a group of detectors, in a portion of the system, are tied in to the new circuit. This approach will be repeated for each group of detectors until the modification is complete.

The licensee has three Ludlum Model 300 alarm meters for use as temporary criticality warning alarms.

No violations were identified.

5. Operations Review

Section 3.2.1 of the license application requires that the licensee's organization conduct their respective activities within federal, state, and local rules and regulations, license criteria, and company policy, criteria and established practices.

A. Conduct of Operations

- (1) Fuel fabrication operations in SV-A for Fort Saint Vrain Reactor (FSVR) fuel have ceased. Fuel fabrication for this high temperature gas-cooled reactor (HTGR) will not resume for approximately two years. NRC/NMSS is currently reviewing the licensee's plans for modifying the SVA surveillance activities during this period of shutdown.
- (2) The production of Triga fuel at the Triga Fuel Fabrication Facility (TFFF) is continuing.
- (3) Development operations in the Sorrento Valley B (SV-B) Building are progressing normally.
- (4) The Hot Cell operations are still at a low level.
- (5) The cleanup of the former Nuclear Materials Waste Processing Center (NMWPC) is at a standstill pending a final decision by the licensee on the utilization of the property. A tour of the area found it nearly the same as at the time of the previous inspection (March 1985). One apparent change was the setting up of a hazardous materials storage area in a newly fenced area.
- (6) The new NMWPC operation was in routine operation as the result of the significant quantities of material being discarded during the cleanup operations in SV-A. Additional attention by the inspector was given to the preparation and packaging of solidified liquid wastes for shipment to an approved burial site (see Section 8.B. for details of a related violation). During this inspection the licensee identified a poor health physics practice in changing the prefilter and the HEPA filter in the NMWPC waste compactor (see Section 8.D. for details). A Corrective Action Request, FOB-001, was written on June 13, 1985, which requires a response by June 17, 1985. Preliminary measurements of collected samples indicated NRC release limits were not exceeded. For more details see Section 8.D.

B. Safety Limits and LCOs

Magnehelic gauges on operating systems were within operating limits. The licensee was apprised by the inspector of some worn flexible connectors on the output side of the HEPA filter bank at SV-B and at SV-A's East HEPA filter bank. The licensee reprocessed pyrophoric carbides to a stable form for storage and is excluding liquids from vault storage during the shutdown. The liquids are being prepared for disposal.

C. Housekeeping

The housekeeping throughout the plants was good. The licensee has used the available time to clean up SV-A. The TFFF remains clean as does SV-B. The appearance of SV-A was helped significantly by the use of the South Vault for storage of fertile materials previously stored in other locations.

No violations were identified.

6. Radiation Protection

Protection against radiation hazards associated with licensed activities is required by 10 CFR Part 20.

A. Internal and External Exposures

A review by the inspector of the "Health Physics Monthly Report" for March, April and May of 1985, and discussions with the Supervisor, Health Physics disclosed there have been no internal or external exposures exceeding Part 20 limits since the last inspection. The 1984 "Personnel Monitoring Report," required by 10 CFR 20.407, was submitted to NRC Headquarters during the first quarter of 1985 by the licensee.

B. Lung Counts

No lung counts were conducted during the second quarter. Helgeson Scientific Services will be onsite July 26-31 to conduct the semi-annual U-235 lung burden counts. Individuals who terminated employment with the licensee because of the two year suspension of HTGR fuel production have been sent a letter inviting them to participate and receive a lung count.

C. Solid Waste Boiler Isokinetic Stack Sampler

Discussions with the Supervisor, Health Physics disclosed that the short 90° bends in the plumbing associated with the stack sampler attached to the solid waste compactor, at the new waste disposal yard, has been satisfactorily resolved. The 90° bends were replaced with smooth curves and an isokinetic sampling head was installed. This closes item (84-18-03).

No violations were identified.

7. Transportation

Licensee transportation activities are regulated by 49 CFR 100-177, 10 CFR 71, and 20.311. In addition, an NRC issued Certificate of Compliance regulates the use of shipping casks used to transport fuel and components to and from FSVR.

This inspection was limited to a review of the licensee's transportation of radioactive waste to US Ecology's Beatty, Nevada waste disposal site.

Since the last inspection 1227 drums and 14 4'x4'x8' boxes of radioactive waste have been transported to the Beatty Site without incident. A random sample of the paperwork associated with the shipments was examined by the inspector and it was found that all requirements of NRC, Department of Transportation (DOT), State of Nevada and US Ecology were met. Two drums on the last shipment (June 7, 1985) which contained State of California licensed material failed to meet two State of Nevada and DOT requirements. These are discussed in Section 8.A.

Discussions with the Director of Quality Assurance and Compliance disclosed that the bulk shipment of approximately 20,000 ft³ of low level contaminated soil from the evaporation pond area to the Beatty, Nevada disposal site has been approved by US Ecology and the State of Nevada. However, the date for the soil removal has not been set pending a decision by GA-Technologie's parent company (Chevron) on the ultimate use of the property. The quality assurance (QA) violation discussed in Section 8.B of this report must be resolved by GA-Technologies prior to any further shipments of waste to the Beatty, Nevada burial site.

No violations were identified.

8. Radioactive Waste Management/10 CFR Part 61

Annex "C" of the current license incorporates guidelines for release of equipment and facilities for unrestricted use. 10 CFR Part 20.301 to Part 20.401 regulates the disposal of waste. 10 CFR Part 61 requires that all radioactive waste prepared for disposal is classified in accordance with Section 61.55 and meet the waste requirements in Section 61.56.

- A. During this inspection, a tour of the new waste disposal area was made and discussions were held with the Supervisor, NMWPC with regard to water standing in drums of solidified liquid waste. Because of a recent licensee incident involving State of California regulated solidified waste at the commercial disposal site near Beatty, Nevada, particular emphasis was placed on determining whether this problem was of a generic nature or was just an isolated case.

As part of this review the NRC inspector decided to observe the reopening of seventy-four drums of the same "vintage" as had been shipped to the Nevada disposal site where the single drum with free standing water had been discovered. Of the seventy-four drums opened one was found to contain about one pint of water. Further

investigation disclosed that this drum as well as the one mentioned above was stored, prior to shipment, less than ten feet from a sprinkling system used to water vegetation on the adjacent hillside. It appeared that the lids on both drums were not properly caulked, thereby allowing water from the sprinkling system to enter the drums. These findings indicated that there is no generic problem with the solidification process. The licensee has decided to eliminate the sprinkling system and replace it with a drip system that allows proper watering of the hillside without the water becoming airborne and impacting on the nearby waste drums. In addition, the licensee has decided to fill the void space at the top of each drum with suitable absorbent just prior to shipment, thereby eliminating the possibility of free standing liquid in the drum.

- B. Further discussions with the licensee disclosed that another drum of waste under State of California jurisdiction, in the same shipment mentioned above, was not properly classified as to contents on the shipping papers. The drum, reading 450 mRem/hr at the surface, was said to contain only thorium whereas it contained thorium and a significant amount of gamma emitting daughters. This problem prompted the NRC inspector to inquire about the QA program required by 10 CFR 20.311(d)(3) which is designed to prevent such a problem from occurring with NRC licensed material. It was found that even though the licensee has been classifying NRC licensed waste correctly to date, as required by Part 61, a formal QA program to insure such compliance has not yet been formulated. This oversight was identified as a violation.
- C. A drum containing the remains of a dismantled fuel block, which had been used in the FSVR, was examined by the inspector in a storage area in back of the Hot Cell Facility. Measurements made on the surface of the drum with a currently calibrated R0-2 survey instrument disclosed a maximum reading of 225 mRem/hr. A second drum nearby of unknown content was reading approximately 750 mRem/hr at the surface. Neither of these drums had yet been prepared for shipment to a waste disposal facility. At the exit interview the licensee was informed that in order to evaluate their waste disposal program more fully, the fate of these two drums as they enter the "waste stream" will be followed as an open item during subsequent inspections. One drum was marked SNI-2415 and the other was identified as containing parts of a Fort Saint Vrain fuel block (85-09-01).
- D. One improper health physics practice was identified by the licensee during this inspection. Both the prefilter and HEPA filter on the waste yard compactor were removed at the same time with the blower running in an attempt to exchange them for new ones. The greatly increased air flow with both filters removed at the same time loosened dust and dirt in the duct and stack and released a dark cloud toward the offsite fence in line with a continuous air sampling device. Fortunately, measurements (which were reviewed by the NRC inspector) taken of the air sample filter and wipes immediately after the incident disclosed that an offsite release exceeding NRC release limits had not occurred. The licensee has

instituted corrective action by requiring that a written procedure be prepared and that it be followed whenever these filters are changed. A licensee Corrective Action Request, FOB-001, was issued on June 13, 1985, which requires a written response by June 17, 1985. The corrective action and the report will be reviewed during the next inspection (85-09-02).

One violation was identified.

9. Emergency Preparedness

License Condition 23 of SNM-696 requires the licensee to implement, maintain and execute the response measures of the Radiological Contingency Plan submitted to the Commission on May 25, 1984 and supplemented on August 22, 1984. The licensee shall also maintain implementing procedures for the Radiological Contingency Plan.

Fire Protection

- (1) The licensee's fire extinguisher inspection program appears to be functioning well. A computer generated listing is now available for each Emergency Services Technician's use during the fire extinguisher inspections. It was noted, however, that compliance with the monthly inspection frequency could be better ascertained if the fire extinguisher tags included the day of inspection along with the month and the year. This item will be reviewed during the next inspection (85-09-03).
- (2) During the inspection the NRC inspector pointed out that the licensee's plans to seal the West Vault precluded monthly fire extinguisher inspections of the three fire extinguisher in the vault. This matter had apparently been overlooked by the licensee. Vault entries will be somewhat restrictive because of physical security constraints; therefore, the licensee now plans relocating the three fire extinguishers just outside the entrance to the vault where they could be inspected as required.

10. Exit Meeting

The results of the inspection were discussed with the licensee's staff identified in Section 1.

The topics included:

- ° training of NRC inspectors and unescorted access
- ° fire extinguisher inspection dates recorded on tags
- ° the successful removal of corrosive liquids and pyrophoric materials from the SV-A West Vault inventory
- ° the deteriorated condition of some flexible connections (boots) on the output side of HEPA filters at SW-A and SV-B

- ° the need to assure communication of identified problems to all managers and supervisors of similar activities under SNM-696.
- ° the need for increased care during startup of modified equipment in which hydrogen is a feed or byproduct, (startup procedures should preclude safety problems)
- ° training program quality
- ° 10 CFR Part 61 training, procedures, assignment of responsibility and quality assurance
- ° a violation was identified for the lack of the quality control program required by 10 CFR Part 20.311(d)(3) to assure compliance with 10 CFR Part 61 requirements
- ° the licensee identified release of the holdup material in the compactor

The inspectors expressed their concern for the licensee's failure to follow good health physics practices during the filter changes on the waste yard compactor. The licensee again confirmed that a procedure for this task was being written.

After the exit meeting, the licensee convened a discussion session on unescorted access for NRC inspectors. The licensee indicated that since the inspectors received GA-Technologies (GA-T) training and passed the GA-T test, an internal letter designating them as authorized individuals qualifying them for unescorted access had been signed the morning of June 14, 1985. The licensee presented the conditions of unescorted access, the advantages of an escort, and indicated a very real interest in accompanying the inspectors. The discussion ended with the inspectors agreeing to present the licensee's concerns to Region V management. The inspectors indicated that definitions were needed, which would be agreed to by Region V and the licensee, before a decision could be made as to the adequacy of the 'unescorted' access with 'accompaniment' that the licensee offered.